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CONSTRUCTING AN EFFECTIVE ANTICOYOTE ELECTRIC FENCE



UNITED STATES
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AGRICULTURE

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SCIENCE AND
EDUCATION
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Constructing an Effective Anticoyote Electric Fence

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A new type of electric fence, modified and tested by Science and Education Administration (SEA) at the U.S. Sheep Experiment Station, Dubois, Idaho, has proved effective in protecting sheep from coyotes. The new fence—known as the Piesse predator fence, after its inventor, Robert Piesse, a fencing contractor from Melbourne, Australia—has succeeded where previous electric or conventional fences have failed to protect sheep from coyotes.

Past attempts at coyote-proof fencing were not successful because all charged wires were used. Would-be intruders were not grounded when touching the

wires and thus could not receive a shock. The new electric fence alternates electrified and ground wires from top to bottom, making it impossible for a coyote to avoid simultaneous contact with a charged and a ground wire. The shock, generated by either a 110-volt AC or 12-volt DC battery energizer, repels but does not injure either coyotes or dogs or sheep that brush up against the fence.

The cost of constructing the electric fence is at least 25 to 30 percent below the cost of conventional fencing.²

FENCING COMPONENTS AND CONSTRUCTION

Fence Design

The Piesse fence consists of 12 alternating ground and charged wires, beginning with the bottom wire. Spacing for wires, posts, and stays are shown in figure 1. An additional charged trip wire is placed 8 inches from the fence around the outside perimeter and 6 inches from the ground (fig. 2). (Note method of stretching the charged trip wire around a corner post.)

All ground wires are connected to four 1-inch steel pipes driven about 5 feet into the ground (fig. 3). The steel ground pipes should be spaced at least 6 feet apart. All charged wires are connected to the energizer (see section on "Power"). A nonelectric gate may be constructed from 1-by 2-inch welded wire fencing and aluminum tubing. The gate should be at least 5 feet high. A concrete sill is buried under the gate. End-post wire strainers should be used (fig. 4).

Wire

Galvanized high tensile steel wire (12.5 gage) is recommended. Smooth wire stretchers should be used to stretch the wire to approximately 200-pound tension.

Posts

Wood corner and brace posts are recommended. Because of the powerful strain on corner posts, corner and brace posts should be set 5-1/2 feet above the ground and at least 3 feet deep in concrete. Line posts may be either fiberglass (no insulators needed) or wood or steel with plastic or porcelain insulators. All wires must be free running from corner to corner to allow for proper tension and maintenance.

Power

A high-voltage energizer must be used to overcome voltage drainage caused by vegetation and the resistance of the animal's body. The only energizers presently known to be capable of providing the necessary voltage are manufactured in New Zealand but are distributed throughout the United States. Addresses of local distributors are listed on page 00. As other energizers with the proper capabilities become available, manufacturers' names and addresses will be on file at the U.S. Sheep Experiment Station (see footnote 1 for address).

¹Range Sheep Production Efficiency Research, U.S. Sheep Experiment Station, Dubois, Idaho 83423.

²Techniques for converting existing livestock fences to electric antipredator fences at low cost are being studied by SEA.

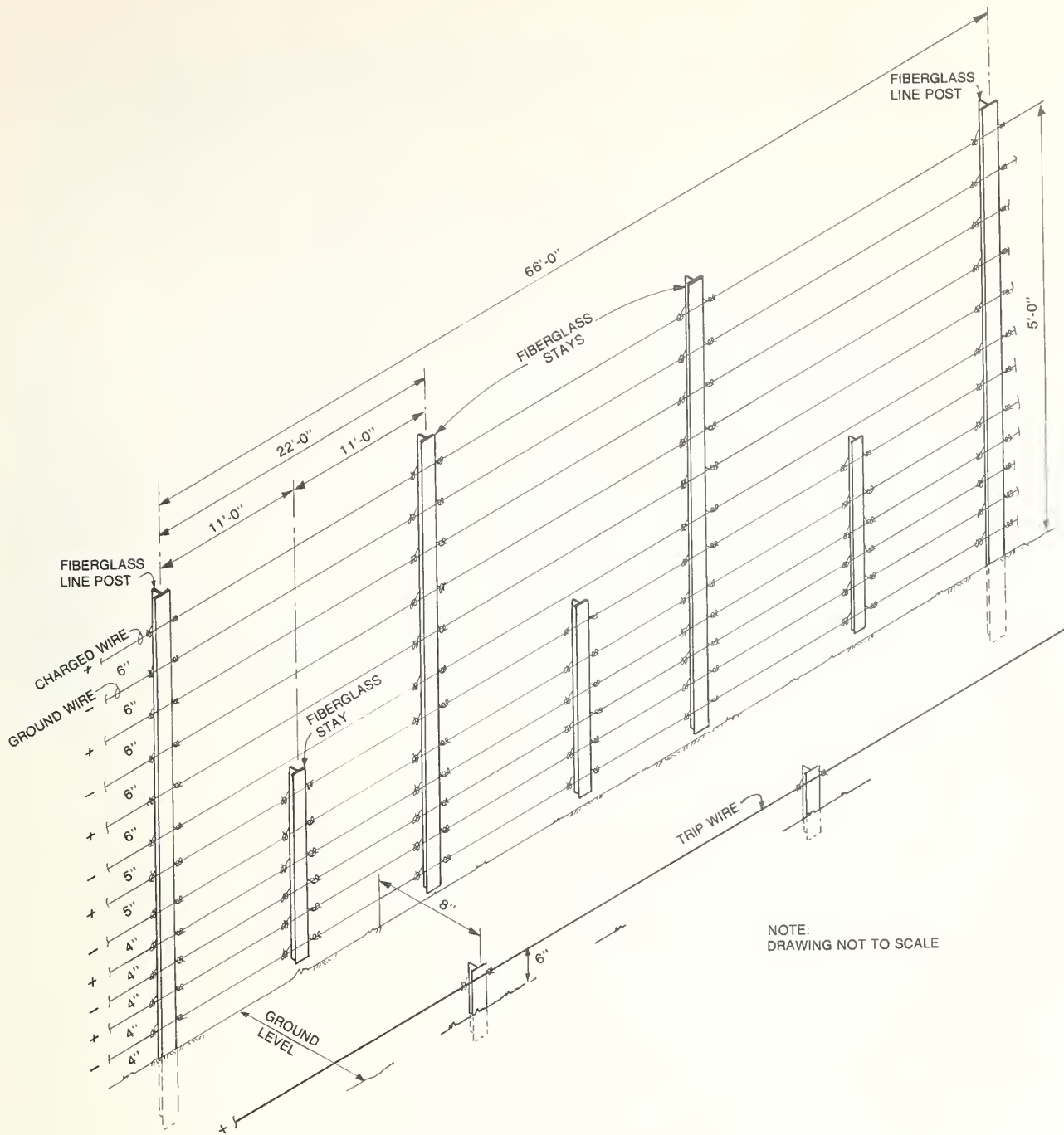


Figure 1.—Electric fence configuration.



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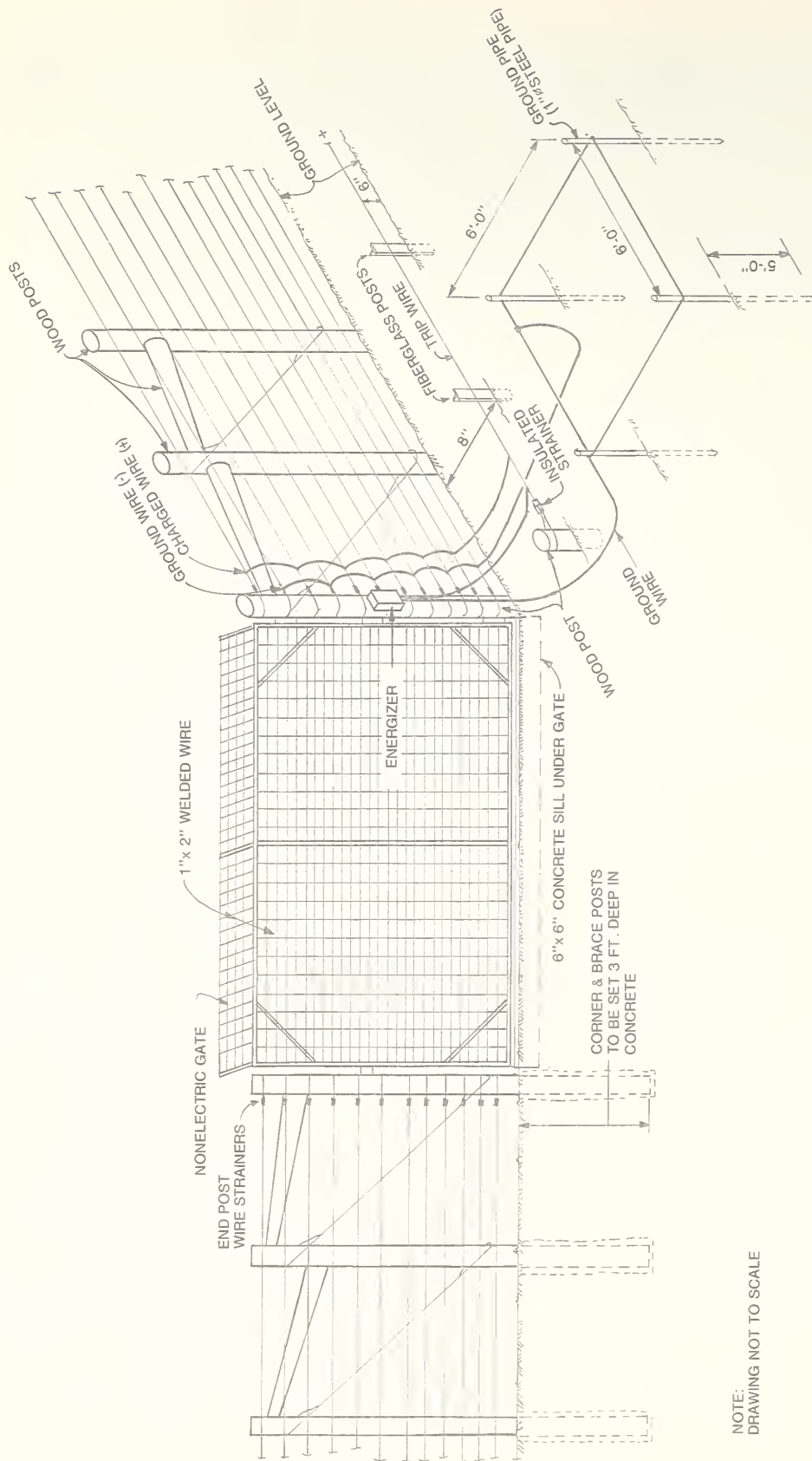
Figure 2.—Charged trip wire around corner of fence.

ADDITIONAL DESIGN INFORMATION

The following factors should be considered when constructing a Piesse fence:

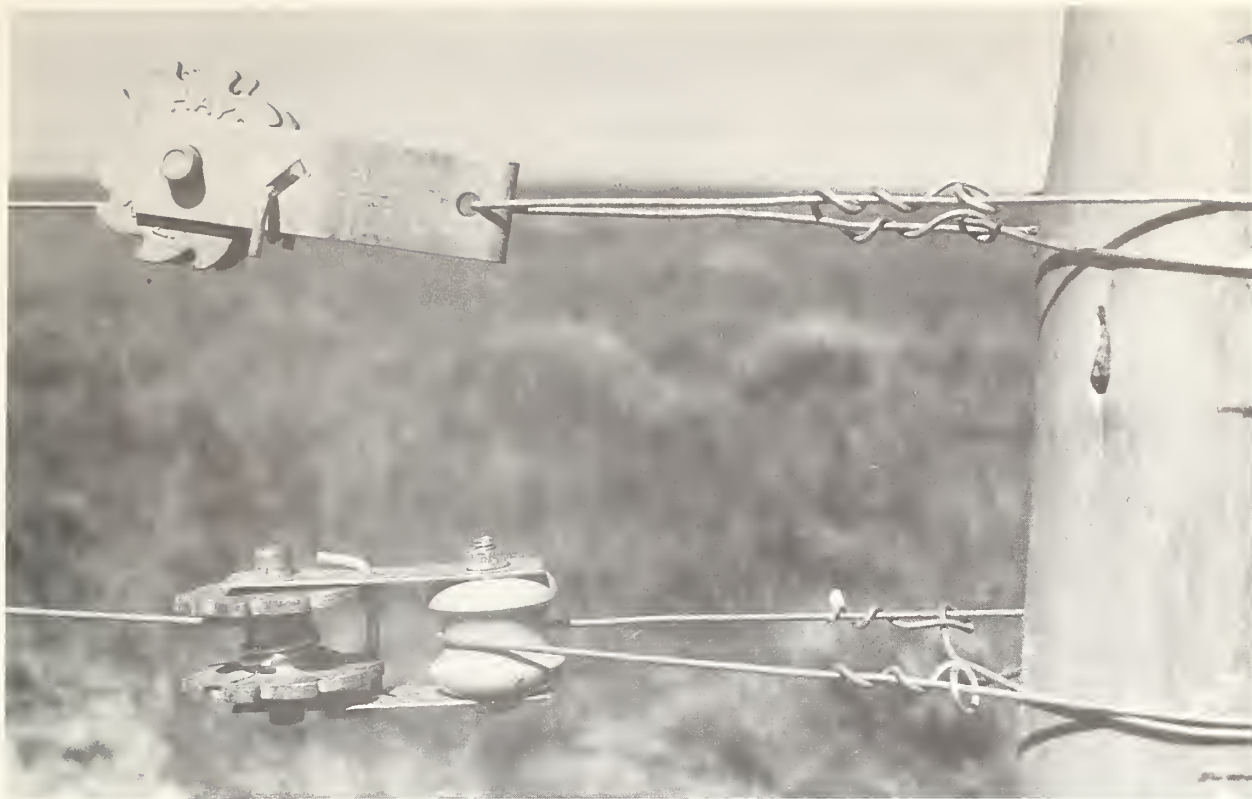
- Depending on land contour, line post spacings may have to be modified from the distances shown in figure 1. Irregular terrain requires that posts be closer than they would be on nearly flat ground.
- The effectiveness of the Piesse fence has not been evaluated against sheep-killing dogs.
- Since any electric fence is potentially dangerous, "Electric Fence" or "Danger" signs should be installed on the fence at least one every 100 yards.
- Fiberglass line posts will not withstand range fires where heavy vegetation exists.

- The charged trip wire will prevent a coyote from digging under the Piesse fence under average soil conditions. In extremely sandy soil, however, a coyote could begin digging far enough out from the trip wire to dig completely under it and the fence.
- If cattle inhabit land adjacent to the electric fence, the charged trip wire may be difficult to maintain.
- Additional single ground posts (with all ground wires attached) should be installed along the fence line approximately every mile to insure proper grounding.
- Local laws should be consulted with regard to use of electrical equipment.



NOTE:
DRAWING NOT TO SCALE

Figure 3.—Nonelectric, coyote-proof gate.



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Figure 4.—End post wire strainers. Note ground wire attached to strainer without insulator (top) and charged wire attached to strainer with insulator (bottom).

INFORMATION ON FENCING COMPONENTS

Many electric fence chargers are available. Research has shown that some chargers do not maintain adequate line voltage when in contact with dense vegetation. Chargers manufactured by Gallagher Electronics, Ltd.,³ New Zealand, were used in field test by the U.S. Sheep Experiment Station and the U.S. Fish and Wildlife Service. The Gallagher units were satisfactory for repelling coyotes. Other electric fence chargers may also perform satisfactorily.

Useful electric fencing components and energizers are available from:

- | | |
|---|---|
| (1) Snell Marketing, Inc.
10910 Wye Dr.
San Antonio, Tex. 78217 | (2) Livewire Products
P.O. Box 53
Rough & Ready, Calif. 95975 |
|---|---|

There are probably other reliable sources of fencing components.

³Mention of a trade name, proprietary product, or specific equipment does not constitute a guarantee or warranty by the U.S. Department of Agriculture and does not imply its approval to the exclusion of other products that may be suitable.

